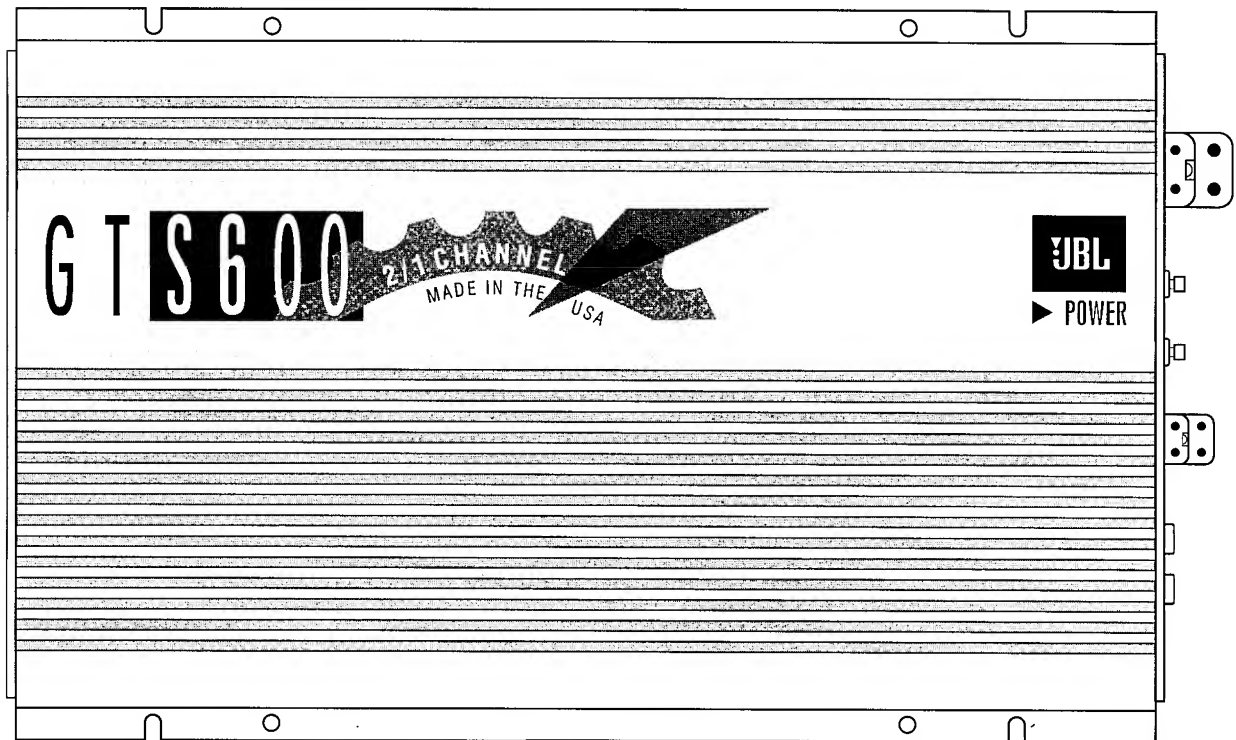


GTS600

2/1 CHANNEL AUTOMOTIVE POWER AMPLIFIER

TECHNICAL MANUAL



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H A Harman International Company

Part No.: GTS600SM Rev A

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GTS600 Specifications

	Nominal Value	Test Limits
Continuous Power Output (20Hz - 20kHz, 14.4V Battery Voltage, 80 kHz Filter)	200W x 2 (4 ohms, 0.05% THD) 300W x 2 (2 ohms, 0.08% THD) 600W x 1 (4 ohms bridged, 0.08% THD)	200W x 2 (4 ohms, <0.2%) 300W x 2 (2 ohms, <0.2%) 600W x 1 (4 ohms bridged, <0.2%)
Signal to Noise Ratio	>100 dBA	>90 dBA
Frequency Response	10Hz - 50kHz (+0, -1dB) 20Hz - 20kHz (+0, -0.1dB)	20Hz - 20kHz (+0, -2dB)
Speaker Level Input Sensitivity (For Rated Power)	100mV - 4V RMS	50 to 200mV at min position 3 to 5 V at max position
Line Level Input Impedance	10k Ohms	not tested
Speaker Level Input Sensitivity (For Rated Power)	200mV - 8V RMS	100 to 400mV at min position 6 to 10 V at max position
Speaker Level Input Impedance	15 Ohms or 100k Ohms (Selectable By Internal Jumpers)	not tested
Bass Boost	+4dB at 40Hz	>+3dB, <+6dB at 40Hz
Built in Electronic Crossover Frequency and Slope	80 Hz, 18dB per Octave Low-Pass Filter (selectable by crossover resistor chips) 80 Hz, 18dB per Octave High-Pass Filter (selectable by crossover resistor chips)	3 dB down at 80 Hz (+/-2 dB)
Damping Factor	>200	not applicable
Power Requirement	11 to 16V DC Negative Ground	not applicable
Fuse Size	40 Amp ATC Type Fuse (2 per amplifier)	not applicable
Size (L x W x H)	17-1/4" x 11-1/4" x 2" (438mm x 286mm x 51mm)	not applicable
Weight	13 lbs. 11 oz. (6.2 kg)	
Speaker Input Mating Connector	Molex Mini-Fit Jr. # 39-01-2040 Metal Pins: 39-00-0038	not applicable
Minimum Speaker Impedance Single Ended, non-bridged Bridged	2 ohms 4 ohms	not applicable

Test Conditions and Notes

- Power testing is completed using 4 Ohm, 250 Watt resistors (such as the Dale RH-250 250W, 4 ohm, 1% resistor)
- The distortion meter, scopes, and any other test equipment used to test the amplifier should be ground isolated to prevent ground loop noise problems.
- In some situations, it may be necessary to connect the ground of the distortion meter to the RCA ground terminal on the amplifier in order to prevent ground noise problems and obtain the correct THD measurements.
- Signal to Noise ratio is measured versus the rated power into 4 ohms using an A weighted meter with the gain control set to the minimum position.
- Frequency response measurements can be taken at 1 watt or rated power. Reference levels should be established at 1 kHz with all crossovers in the "flat" or "off" position.
- Crossover frequency measurements should be taken at 1 watt output for the speaker outputs and 0.5 V output on the preamp outputs. The specification is taken relative to the 40 Hz output on the Low Pass filter and relative to the 1 kHz output on the high pass filter. Right and Left channel reference levels should be reestablished for each measurement.

Features

- Bridgeable 2 or 1 Channel Operation.
- Simultaneous Stereo + Mono Operation.
- Amplifier 18dB/Octave Frequency Selectable High-Pass or Low-Pass Crossovers.
- Preamp Output with Frequency Selectable High-Pass or Low-Pass Crossover.
- No Current Limiting.
- Oversized Floating Rail (OFR) MOSFET Switch-Mode Power Supply
- Common Sense 2-way Turn-on
- Switchable Bass Boost
- Stealth Remote Silent Turn-On Circuitry with Power-On Indicator
- Continuously Adjustable Gain Controls.
- Capable of Single-Ended Operation Into 2-Ohm Loads.
- Fully Complementary, Direct-Coupled, Discrete Power Amplifier Circuitry.
- Gold Plated RCA Input Connectors.
- Gold Plated Power and Speaker Connectors.
- Third order, (18dB per Octave) Capacitive/Inductive Power-Supply Filtering.
- Input Mode Switching.
- Speaker Output Short Circuit Protection Circuitry.
- Made in USA

Controls and Connections

1. **Preamp-Level Input Connector** - Use these connectors for line (preamp) level input to the amplifier.

2. **Preamp-Level Output Connector** - Use these outputs to send the signal to additional amplifiers.

3. **Speaker-Level Input Connector** - Use this connector for speaker level input signals. A wire harness is supplied for use with this connector. See "Typical System Configuration" section (page 5) for wiring instructions. This input also includes JBL's Common Sense input circuitry which turns the amplifier on as soon as the high powered head unit connected to this input is turned on.

4. **Speaker Output Connector** - Connect speaker wiring to this connector. See page 5 for more information.

5., 6., 7., 8., **Power Connector** - Connection for power wires. See page 5 for information on proper connections.

9. **Fuse** - 40 AMP ATC two per amp.

10. **Gain Control** - Use this control to adjust the input sensitivity of the amplifier.

11. **Preamp-Output Crossover Switch** - This switch controls the built-in crossover that is directed to the preamp-output connectors. Set the switch to "Flat" for full band operation. Set this switch to "Low-Pass" to activate the low-pass filter on the preamp output (for subwoofer use). Set the switch to

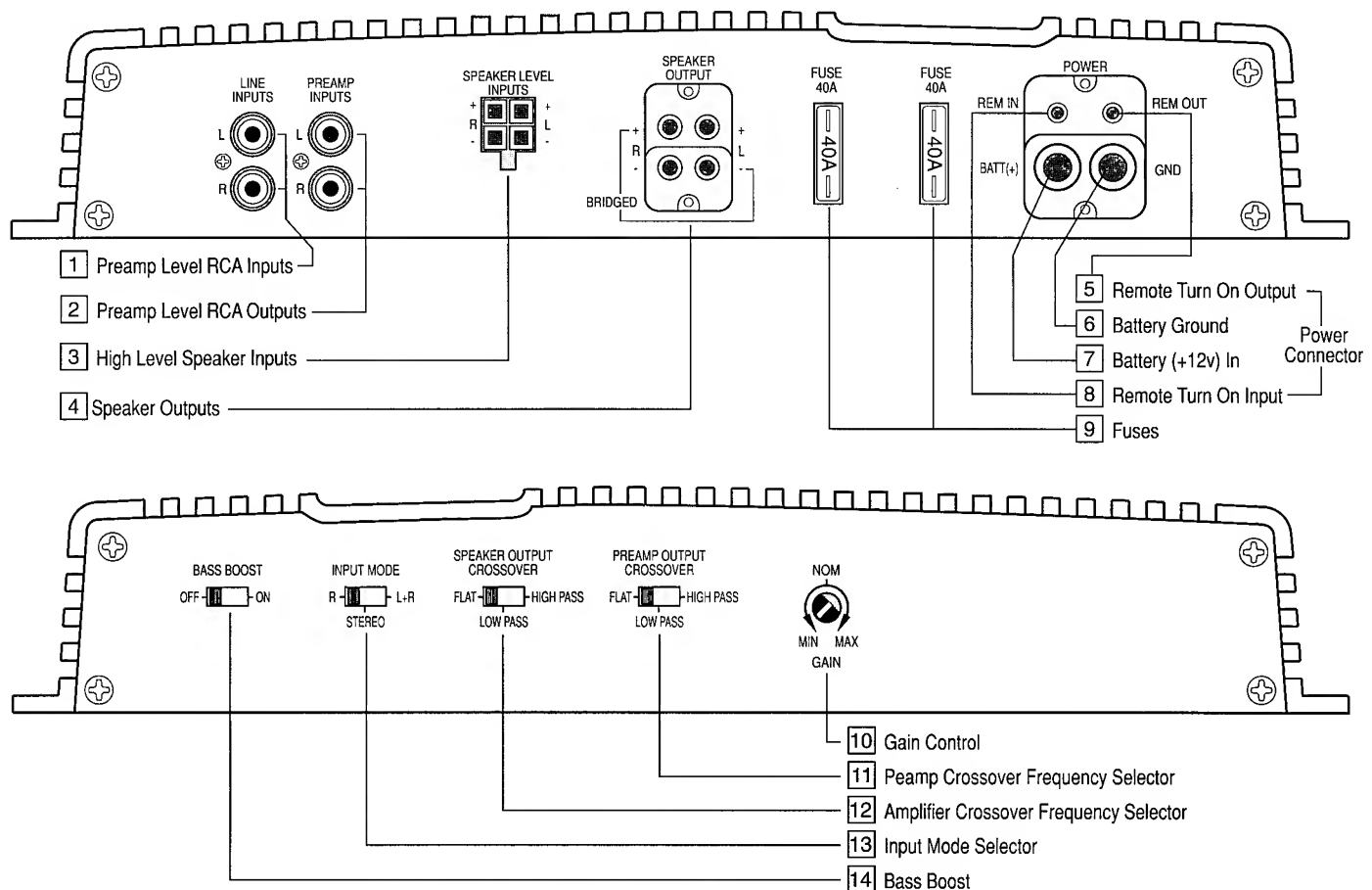
"High-Pass" to activate the high-pass filter for use with satellite speakers on the preamp outputs.

12. **Speaker Output Crossover Switch** - This switch controls the built-in crossover that is connected to the power amplifier circuitry. Set the switch to "Flat" for full band operation. Set this switch to "Low Pass" to activate the low pass filter on the amplifier (for subwoofer use). Set the switch to "High Pass" to activate the high pass filter for use with satellite speakers.

13. **Input Mode Selector** - This switch is used to set the input mode for both preamp and speaker-level inputs. Set this switch to Stereo for normal operation using both left and right inputs. Set this switch to R to drive both the left and right output channels with only a single input on the right channel. Set this switch to "L+R" to sum the left and right inputs for a mono output on both amplifier channels. The input mode selection switch does not affect the preamp outputs.

14. **Bass Boost Switch** - This activates a built-in Bass Boost circuit used to increase low-bass output.

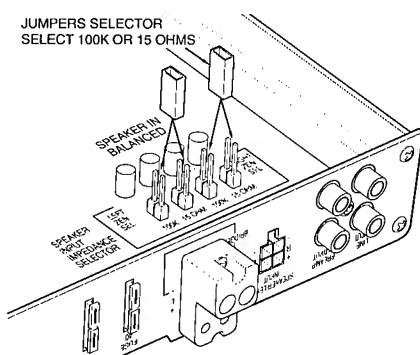
Power Indicator LED (on chassis top) - LED steadily illuminates for normal operation. LED blinks when protection circuitry or muting is engaged and during initial power-up.



Internal Adjustments

Speaker-Level Input Impedance Adjustments

The speaker level inputs of the GTS600 comes factory set with 100K ohm input impedance. This will provide the lowest distortion operation from the speaker outputs of most modern head units by reducing the power the amplifier in the head unit must deliver to practically nothing. The resulting signal will practically be as free from noise and distortion as a preamp-level connection. On some older, or lower-priced head units, this load will not facilitate proper fader operation. To allow for this, we have provided the ability to change the input impedance of the speaker-level inputs to 15 ohms. This is accomplished by connecting the jumpers as shown in the diagram below.



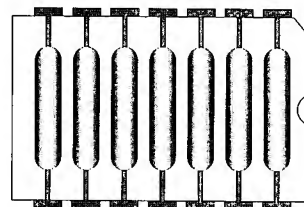
Crossover Frequency Adjustments

The GTS600 amplifier includes built-in frequency selectable crossovers. One crossover is connected in series with the amplifier circuitry and the other crossover is connected to the preamp level output jacks.

Frequency	Resistor Value	JBL Part Number
50Hz	47K Ω	1-23-750
80Hz	33K Ω	1-23-817
120Hz	22K Ω	1-23-820
200Hz	12K Ω	1-23-821
250Hz	10K Ω	1-23-810
375Hz	6.8K Ω	1-23-822
500Hz	4.7K Ω	1-23-815
650Hz	3.9K Ω	1-23-823
2.5kHz	1K Ω	1-23-824
5kHz	470 Ω	1-23-816

- The crossover frequencies are set by "chips" inside the amplifier. These "chips" are simply a set of resistors, connected across the pins and molded into a single package. The crossover frequencies may be changed to any value desired by changing the resistor network.

Custom "Chip" Construction



- Each resistor in the package has the same value.
- If you know the crossover frequency you want, you can calculate the resistor value necessary by solving the following equation:

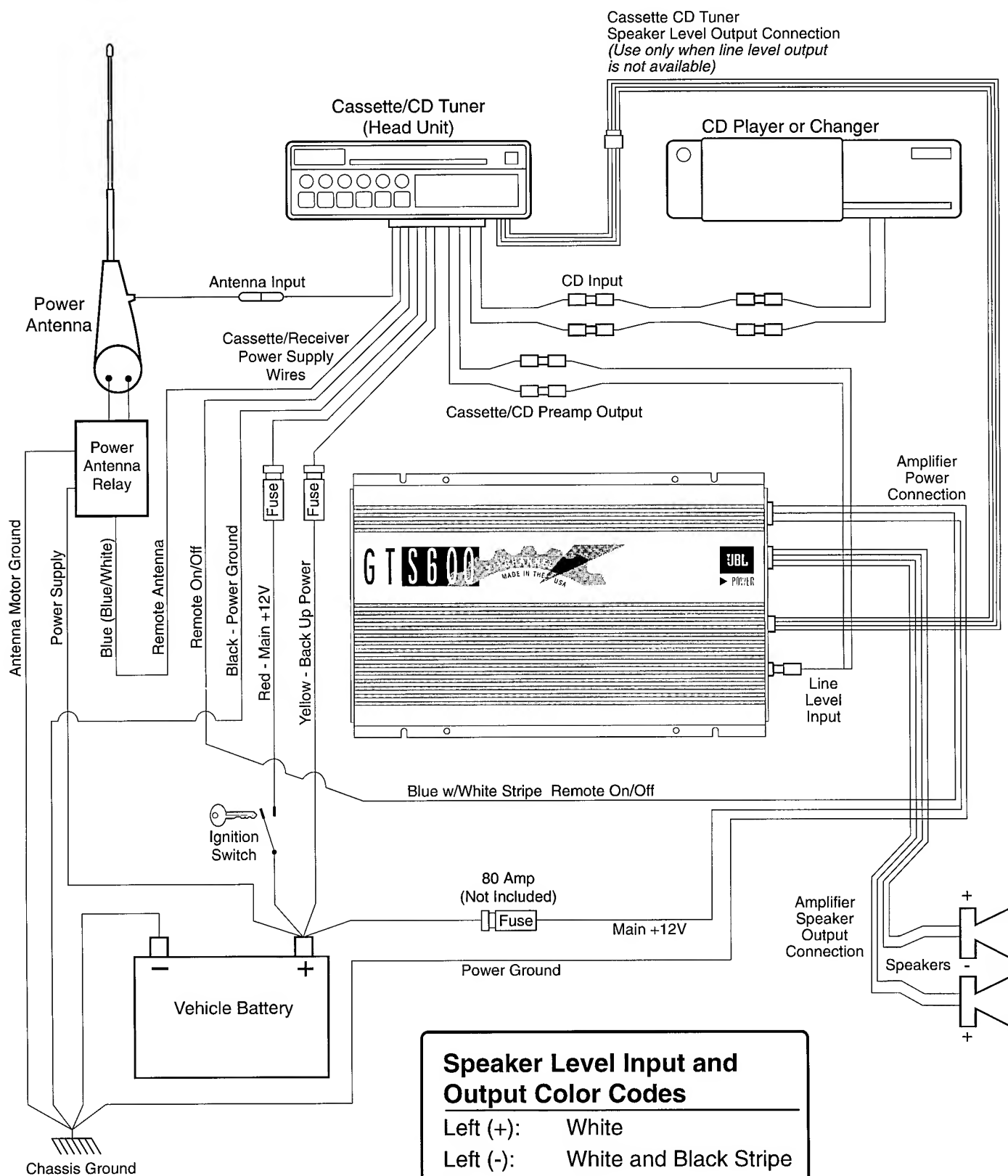
$$\text{Resistor Value in Ohms} = \frac{2,500,000}{\text{Crossover Frequency in Hz}}$$

- Use the following equation if you have a resistor pack of a known value, and want to find its crossover frequency.

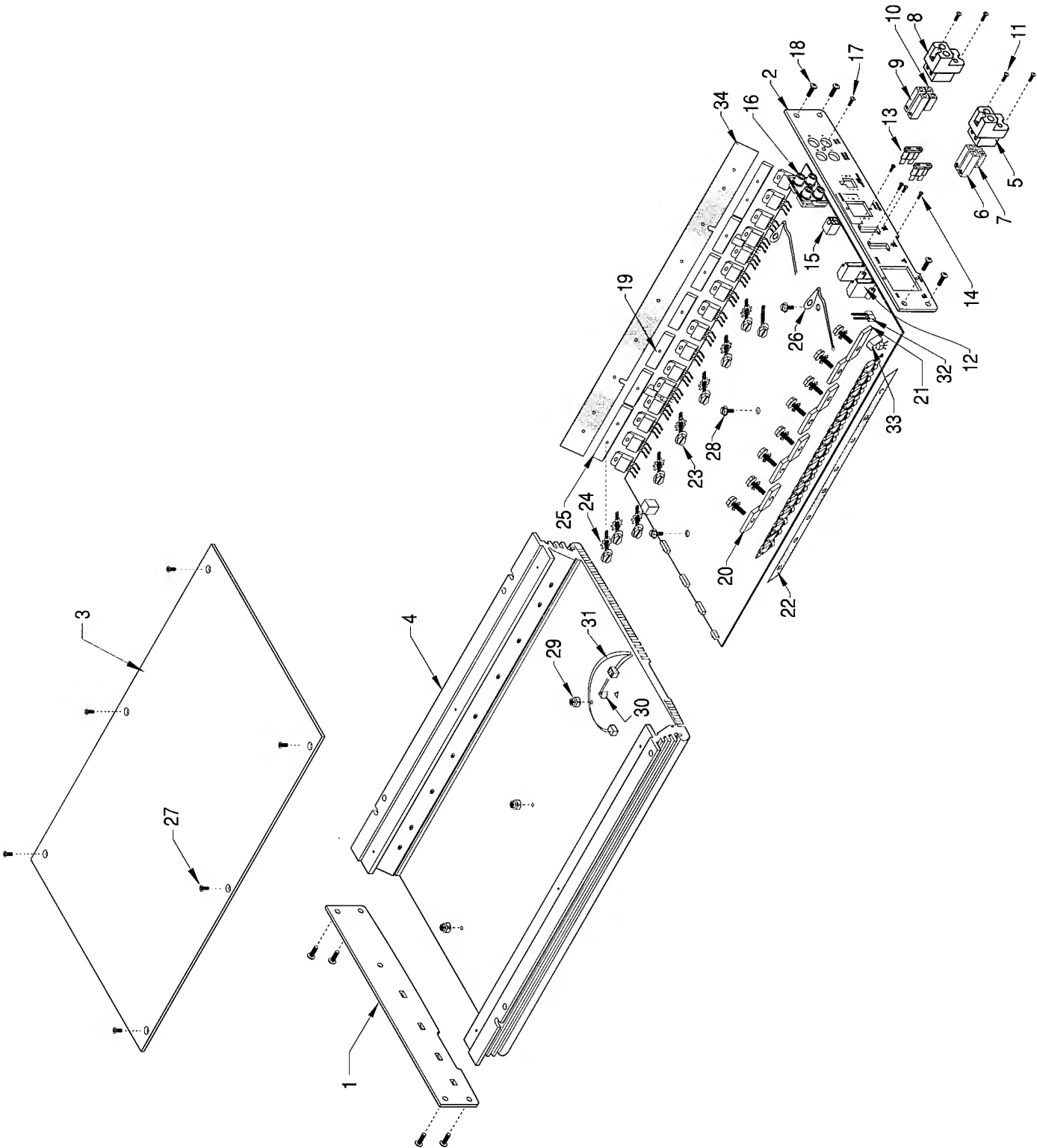
$$\text{Resistor Value in Hz} = \frac{2,500,000}{\text{Crossover Resistor Value in Ohms}}$$

- To build "chips" from discrete resistors, solder the resistors to a standard 14-pin "DIP Header" according to the diagram. If a DIP Header is not available, you may bend the leads of 1/4"-watt resistors 90 degrees, trim them to 1/8"-length, and insert them directly into the chip sockets.

Typical System Configuration



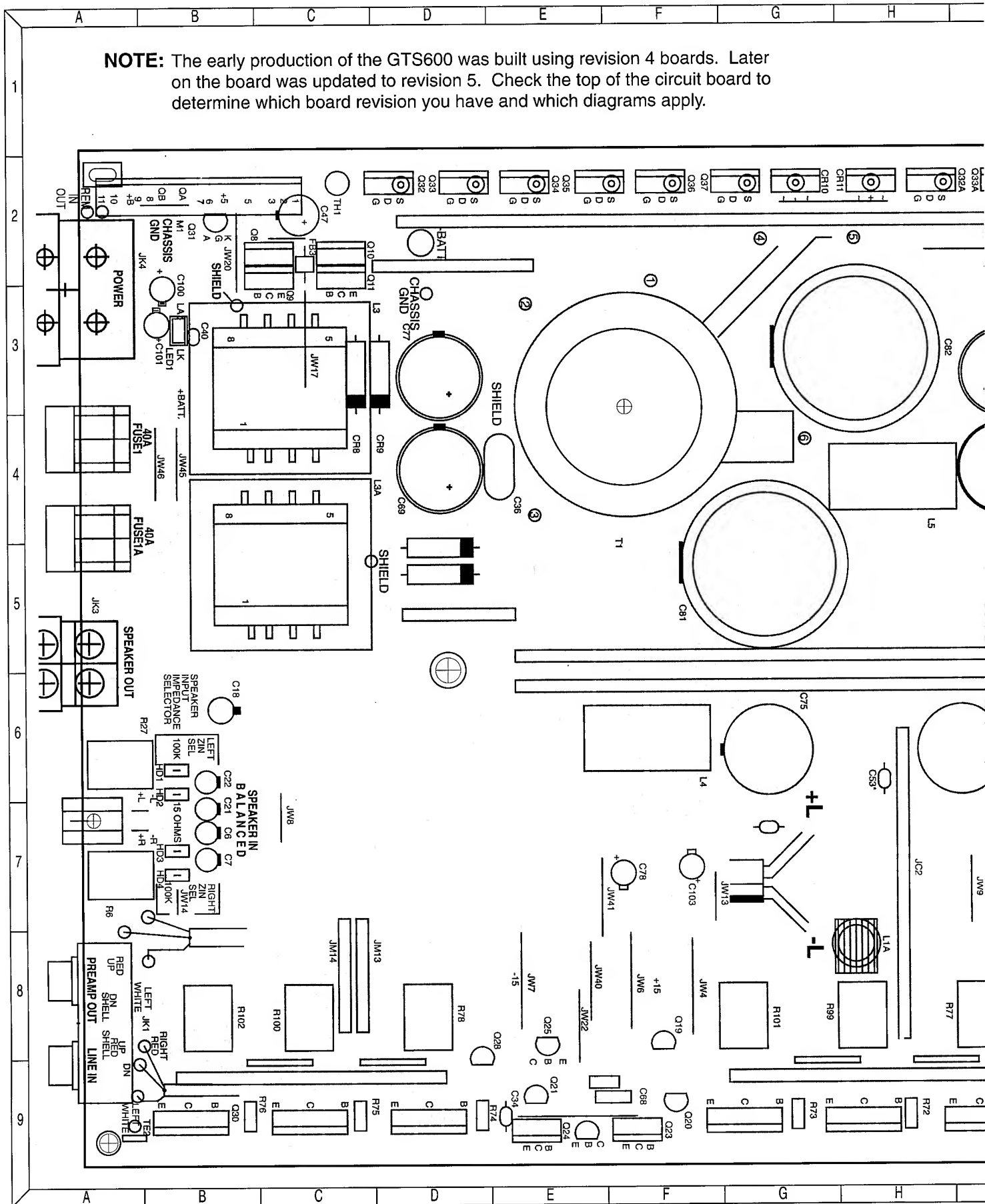
Mechanical Exploded View



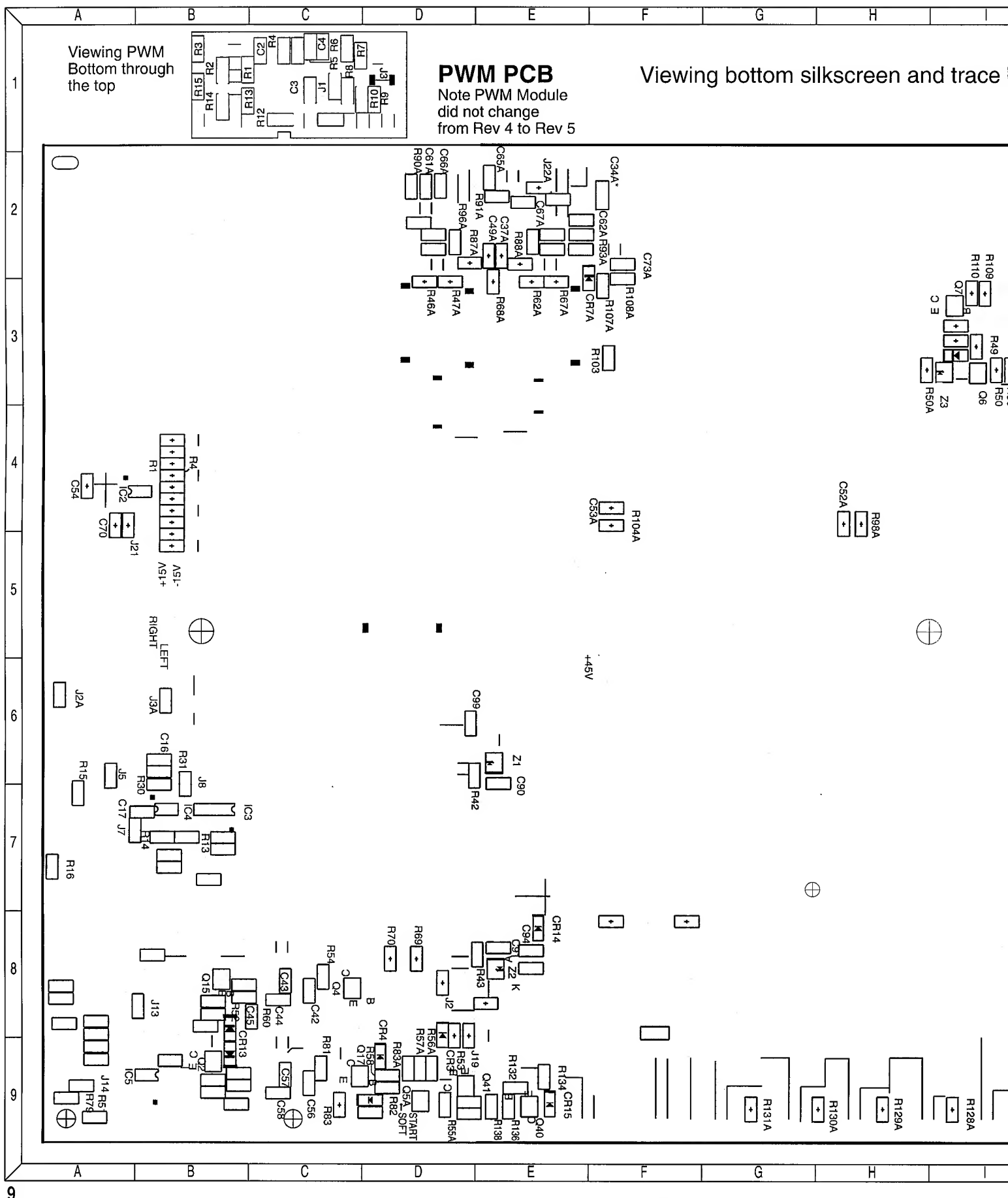
GTS600 Mechanical Parts

REF. No.	DESCRIPTION	PART No.	QNTY.				
1	FRONT PLATE FOR GTS600	BR1207	1	23	SC 6-32x 3/4 CUTT-THR, HEX WASHER HEAD, POINT F, ZINC F.	SC1192	17
2	REAR PLATE FOR GTS600	BR1208	1	24	WASHER EXTERNAL TOOTH FOR #6 SCREW ZINC FINISH	WA1049	17
3	GTS600 BOTTOM PLATE 16" LENGTH	BR1206	1	25	ALUMINUM BAR 4.8x12.7x67mm.	BR1254	2
4	HEATSINK FOR GTS600 16" LENGTH 11" WIDTH	HS1074	1	26	GROUND HARNESS	VA0007	2
5	POWER CONNECTOR FOR AWG 4	CO1263	1	27	SC 4-40x 1/4 TAPT-THR, FLAT PHI HEAD, ZINC FSH	SC1188	6
6	LOWER POWER ALUMINUM BAR, AWG 4, GOLD PLATED. MATES WITH SUNLAND P/N CO1263	BR1287	2	28	SC 6-32x 3/8 TAPTITE, HEX WASHER HEAD, ZINC FSH	SC1194	1
7	UPPER POWER ALUMINUM BAR, AWG 16, GOLD PLATED MATES WITH SUNLAND P/N CO1263	BR1286	2	29	SPACER 1/4" ROUND 3/16" LENGTH ALUMINUM	ST1018	3
8	SPEAKER OUTPUT CONNECTOR 2-CH, 4 POSITIONS	CO1259	1	30	LED RED DIFUSED (TRIANGLE SHAPE)	LE1029	1
9	LOWER SPEAKER ALUMINUM BAR, AWG 16, GOLD PLATED. MATES WITH SUNLAND P/N CO1259	BR1284	2	31	LED HARNESS	XX119201	1
10	UPPER SPEAKER ALUMINUM BAR, AWG 16, GOLD PLATED. MATES WITH SUNLAND P/N CO1259	BR1285	2	32	CONNECTOR HEADER	CO1284	1
11	SC 4-40x 7/16 TAPT-THR, PAN PHI HEAD, NICKEL FSH	SC1090	4	33	SILICONE FOAM WITH ACRYLIC PRESSURE SENSITIVE ADHESIVE 3/8"Lx1/4"W,GRAY,(3/16"T)	SP1020	3
12	FUSE HOLDER	FH1001	2	34	SIL PAD INSULATOR TO-3P WITH ADHESIVE 1.000" x 0.750"	SP1073	12
13	FUSE	FS1061	2		SILICONE GREASE #340 DOW	MS1004	0.25OZ
14	SC 1-42x 5/16 TAPPING-THR, PAN PHI HEAD, POINT B, NICKEL FSH	SC1197	4		SC 6-32 x 7/16 TAPTITE, HEXAG WASHER HEAD, WITH OR WITH OUT SLOTTED, STEEL, ZINC FINISH.	SC1199	2
15	HEADER MOLEX	CO1075	1		SC 6-32x 1/4 HEX SOCKET SET SCREW, FLAT POINT, ALLOY STEEL, GOLD FLASH.	SC1200	8
16	RCA CONNECTORS	CO1274	1		SC 6-32x 3/8 HEX SOCKET SET SCREW, FLAT POINT, ALLOY STEEL, GOLD FLASH	SC1201	4
17	SC M3x1.25x10 PLAS-THR, PAN PHI HEAD, NICKEL FSH	SC1189	1		SC 5/16-18x3/8 HEX SOCKET SET SCREW, FLAT POINT, ALLOY STEEL, GOLD FLASH. @MECH-PL	SC1203	4
18	SC 6-32x 1/2 TAPT-THR, PAN PHI HEAD, NICKEL FSH	SC1187	8		SILICONE SPONGE WITH ACRYLIC PRESSURE SENSITIVE ADHESIVE 1"L x 1/2"W x 1/8"T ORANGE	SP1076	2
19	ALUMINUM BAR 4.8x12.7x40 MM.	BR1187	6				
20	ALUMINUM BAR 4.8x12.7x25.4 MM.	BR1240	6				
21	ALUMINUM BAR 4.8x12.7x35.0mm	BR1250	1				
22	SIL PAD INSULATOR TO-220 WITH ADHESIVE 0.750" x 0.500"	SP1072	20				

NOTE: The early production of the GTS600 was built using revision 4 boards. Later on the board was updated to revision 5. Check the top of the circuit board to determine which board revision you have and which diagrams apply.

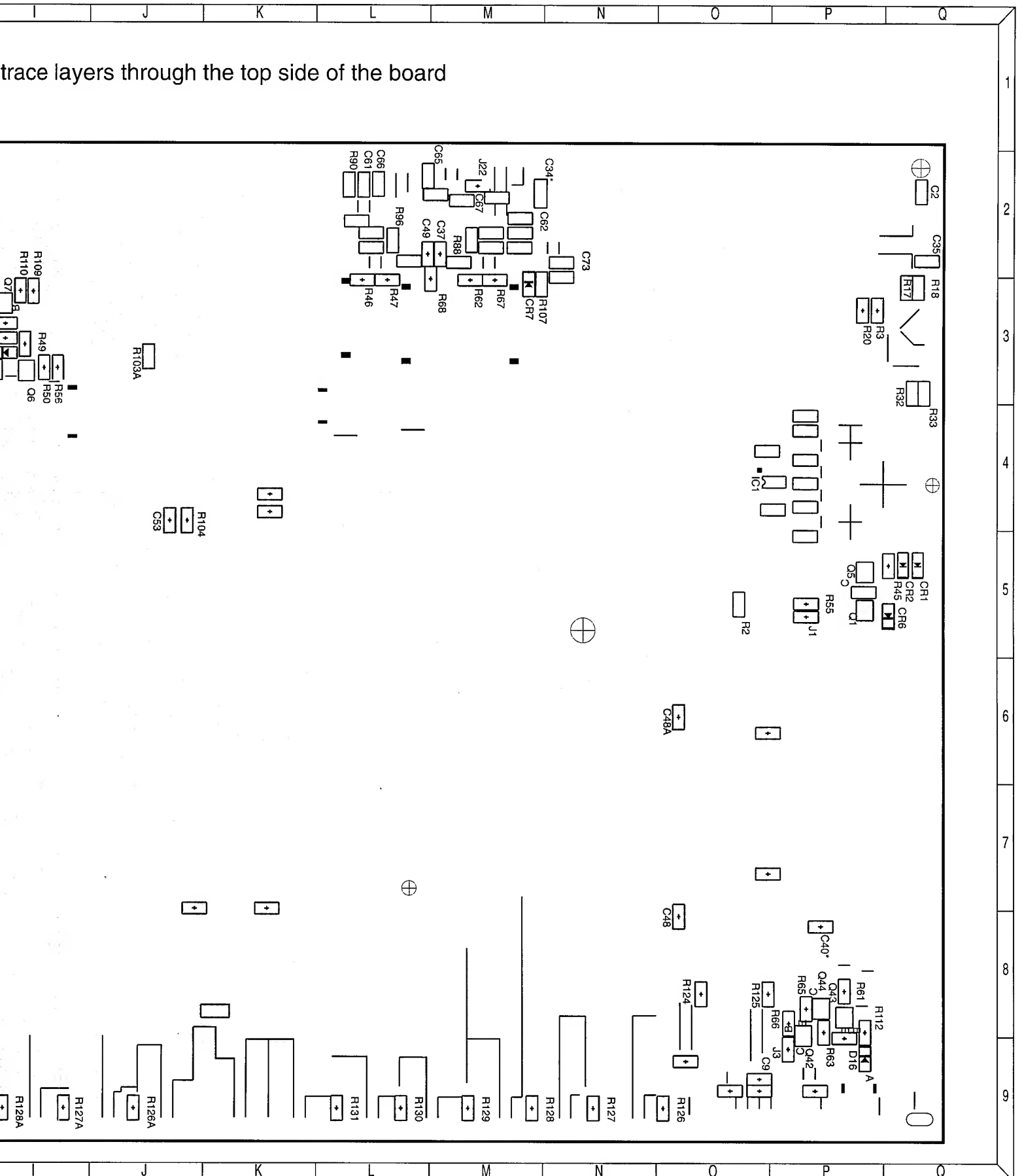






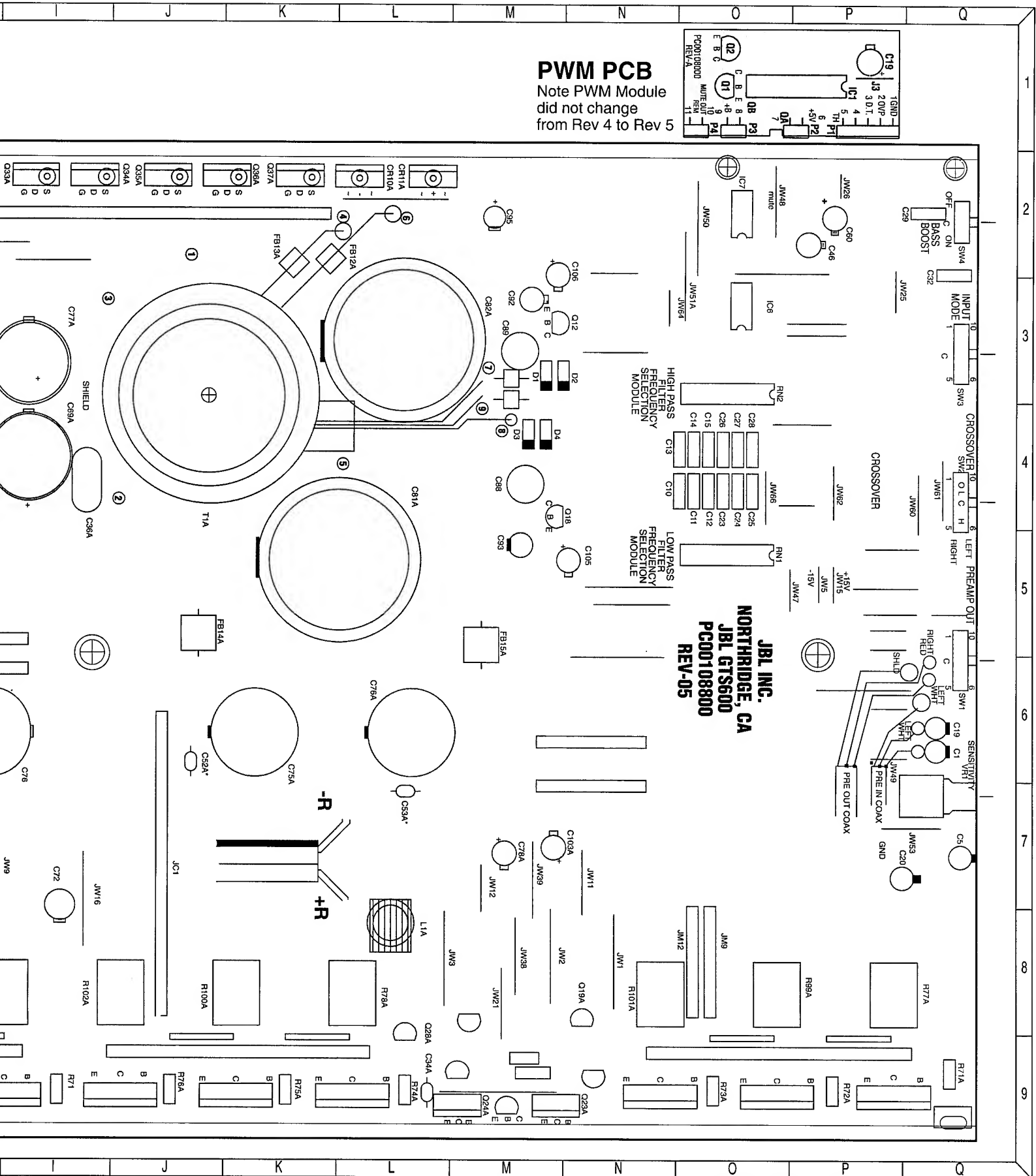
B's Rev 4 (Bottom Side)

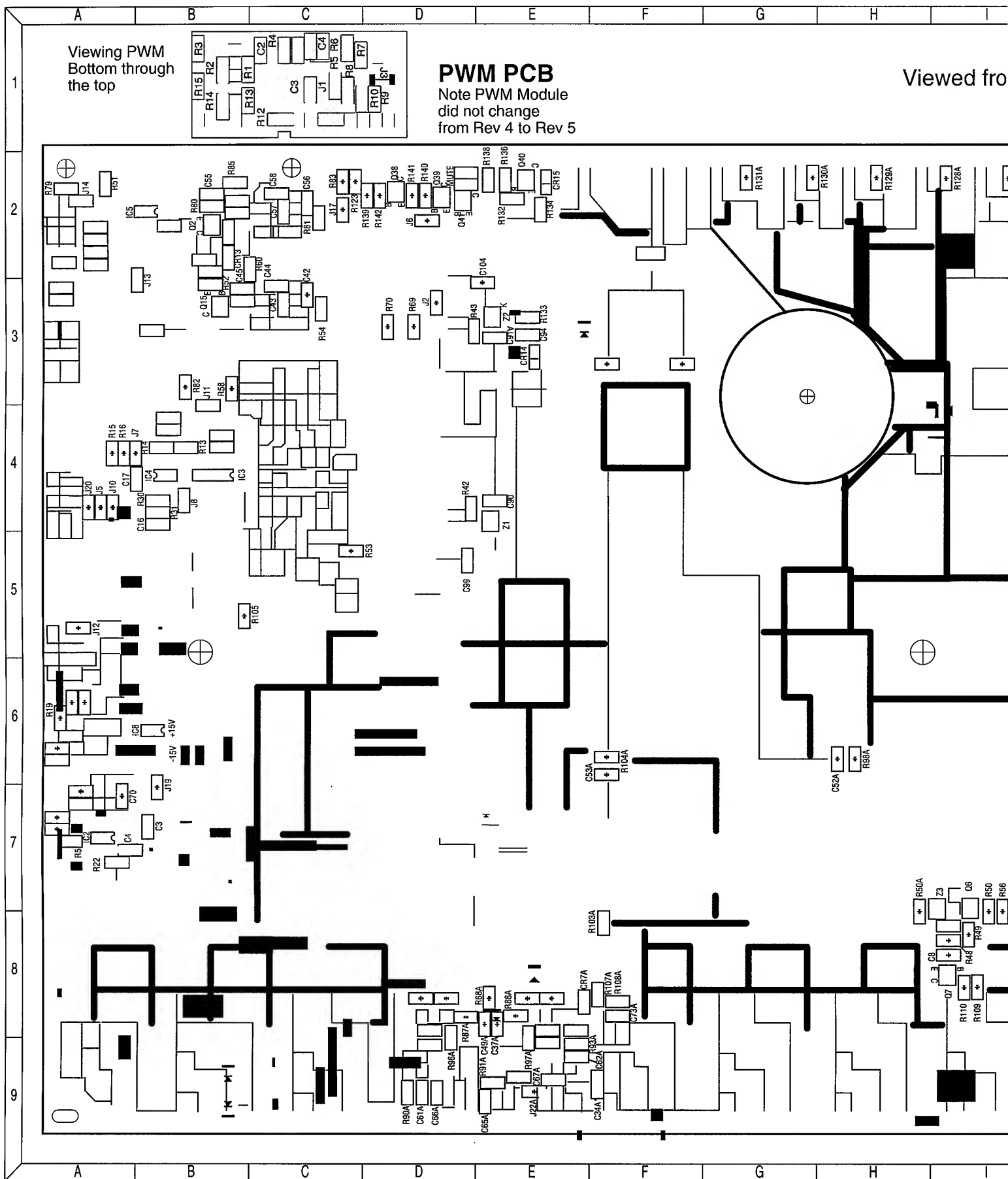
trace layers through the top side of the board



NOTE: The early production of the GTS600 was built using revision 4 boards. Later on the board was updated to revision 5. Check the top of the circuit board to determine which board revision you have and which diagrams apply.

side viewing traces through the board)





GTS600 Electrical Parts List

GTS600 MAIN PCB ASSEMBLY

REFERENCE No.	DESCRIPTION	PART NO.	QNTY.
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Capacitors

C1, 5, 19, 20, 78, 78A, 92, 93, 95, 103, 103A, 105, 106	CAP. ALUM EL. 22.00 μ F 20% 25V 5X11 RADIAL AMMOPACK F=2.5mm LS=2.5mm	CP1352	13
C2-4, 8, 9, 16, 17, 30, 31, 33, 33A, 40, 43, 44, 57, 58, 61, 61A, 62, 62A, 65, 65A, 90, 91, 94, 99, C104	CAP. CERAMIC 0.10 μ F 20% 50V Z5U T/R 1206 PKG.	CP1426	27
C6, 7, 18, 21, 22, 100, 101	CAP. ALUM EL. 2.20 μ F20% 50V 85C A/P RADIAL LEAD 4 X 7 T/R LS= 1.5mm, F=2.5mm	CP1415	7
C10, 13, 23, 26	CAP. POLY FIL 0.082 μ F 5% 63V 85C T/R RADIAL LEAD METALLIZED LS=5mm	CP1535	4
C12, 25	CAP. POLY FIL 0.015 μ F 5% 63V 85C T/R RADIAL LEAD METALLIZED LS=5mm	CP1534	2
C11, 15, 24, 28	CAP. POLY FIL 0.22 μ F 5% 63V 85 DEG C T/R RADIAL METALLIZED LS=5mm	CP1177	4
C14, 27	CAP. POLY FIL 0.022 μ F 5% 63V 85 DEG C T/R RADIAL LEAD METALLIZED LS=5mm	CP1178	2
C29, 32, 68A, C68	CAP. POLY FIL 0.047 μ F 5% 63V V 85C T/R RADIAL LEAD F=5.0 mm	CP1539	4
C34A, 34, 102, 102A	CAP. CERAMIC 0.10 μ F 20% 100V Z5U T/R 1210 PKG.	CP1552	4
C36, 36A	CAP. POLY FIL 1.00 μ F 10% 50V RADIAL T/R LS=5.0 mm	CP1126	2
C37, 37A, 66, 66A, 67, 67A, C97, 98	CAP. CERAMIC 100.00 pF 10% 50V X7R T/R 1206	CP1496	8
C41, 55	CAP. CERAMIC 150.00 pF 5% 50V NPO T/R 1206 PKG	CP1563	2
C45, 49, 49A, 59	CAP. CERAMIC 33.00 pF 5% 50V NPO T/R 1206	CP1475	4
C46, 47, 60, C72	CAP. ALUM EL. 100.00 μ F 20% 16V 85C A/P RADIAL LEAD 6.3 X 7 T/R LS=2.0mm F=2.5mm	CP1411	4
C48, 48A, 50, 50A, 51, 51A, 52, 52A, 53, 53A, 73A, C73	CAP. CERAMIC 0.10 mF 20% 50V Z5U T/R 1206 PKG	CP1426	14
C54, 70	CAP. CERAMIC 10.00 pF 5%	CP1542	2
C69, 69A, 77, 77A	CAP. ALUM EL. 2200.00 μ F 20% 25V 105C RADIAL LEAD	CP1355	4
C75, 75A, 76, 76A	CAP. ALUM EL 1000.00 μ F 20% 50V 105C RADIAL LEAD 18x26mm. L.S.=7.5mm.	CP1546	4
C81, 81A, 82, 82A	CAP. ALUM EL 4700.00 μ F 20% 50V 85C RADIAL LEAD	CP1545	4
C88, C89	CAP. ALUM EL. 100.00 μ F 20% 35 V 85C RADIAL LEAD ON TAPE (AMMO PACK OR REEL) 5mm LEAD SPACING ON TAPE	CP1547	2
C63, 63A, 64, 64A	CAP CERAMIC 56pF, 5%	CP1557	4

Diodes

CR8, 8A, 9, 9A	RECTIFIER DIODE 3A/200V MAX, 100V MIN, T/R AXIAL TAPE SPACE= 52.4mm *(TAITRON 1N5401), (GI 1N5625GP)	DI1005	4
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REF. No.	DESCRIPTION	PART No.	QNTY.
D1,2,3,4	DIODE FAST REC. 1A 100V AXIAL, TAPE SPACE= 52.4mm *(GI UF4002), (MOTOROLA MUR110RL)	DI1010	4
CR11, CR11A	DUAL RECTIFIER 100V 16A COMMON CATHODE *(G.I. FEP16BT/CT), (D.I. SF162C)	DI1053	2
CR10, CR10A	DUAL RECTIFIER 100V 16A COMMON ANODE *(G.I. FEN16BT/CT), (D.I. SF162A)	DI1054	2
CR1, 2, 6, 7, 12, 13, D5, 16 CR7A, 14, 15	DI. RECTIF SWCH 80V/15mA MELF OR LL-34 PKG. T/R CATHODE ON HOLE SIDE 2500 PCS/REEL (SMD) *(SANYO LFB01-CT1), (ROHM RLS4148-TE11)	DI1132	11
Z1, 2	DI. ZENER 15V/200mW/ 5% CP OR SOT-23 PKG. T/R 1-PIN SIDE ON FEED HOLE SIDE (SMD) *(SANYO DZD15-TB), (KEC Z02W16-RTR)	DI1150	2
Z3	DI. ZENER 16V/200mW/ 5% CP or SOT-23 PKG. T/R 1-PIN SIDE ON FEED HOLE SIDE (SMD) *(SANYO DZD16-TB), (KEC Z02W16-RTR)	DI1167	1
Integrated Circuits			
IC1, 4, 5, 8	IC DUAL LOW-NOISE JFET-INPUT OP-AMP 0 TO 70C, SMD SO-8 OR DMP-8 PKG. TAPE & REEL PIN-1 SIDE ON FEED HOLE SIDE *(T.I. TL072CDR), (SGS TL072CDT)	IC1041	4
IC3	IC QUAD LOW NOISE J-FET-INPUT OP-AMP, 0C to 70C, SMD, SO-14 OR DMP-14 PKG. T/R PIN-1 SIDE ON FEED HOLE SIDE *(T.I. TL074CDR), (SGS-THOMSON TL074CDT)	IC1162	1
IC2	IC HIGH PERFORMANCE DUAL LOW-NOISE OP-AMP SMD DMP-8 PKG T/R PIN-1 ON FEED HOLE SIDE *(JRC NJM5532M-TE3)	IC1175	1
IC6, 7	HIGH PERFORMANCE OP-AMP PIN DIP PKG *(SGS LM318N), (T.I. LM318P)	IC1040	2
Resistors			
R1, 19, 42, 43, 57, 60, 61, 65, 68A, 68-70, 85, R111, 113, 137, R140	RES. F/CHIP 1.00 K Ω 5% 1/8W T/R 1206 PKG	RS1700	17
R2, 17, 32, 41, 48, 49, 52, 55, 80, 96, 96A, 97, 97A, 109, 110, 112, R123, 136, 138, 141	RES. F/CHIP 10.00 K Ω 5% 1/8W T/R 1206 PKG.	RS1701	20.
R3, 4, 11, 20, 21, 28, 36, 40, 59, 84	RES. F/CHIP 22.00 K Ω 5% 1/8W T/R 1206 PKG	RS1704	10.
R5, 22, 87, 87A, 88, 88A, 133, 134, R139	RES. F/CHIP 2.20 K Ω 5% 1/8W T/R 1206 PKG.	RS1703	9
R6, 27	RES.WIRE WO. 15 Ω 5 % 5.0W WELDED CONSTRUCTION, RADIAL LS=0.200 BULK	RS1869	2
R7, 8, 9, R10, 23, 24, 25, 26	RES. F/CHIP 51.00 K Ω 5% 1/8W T/R 1206	RS1872	8
R12, 29	RES. F/CHIP 27K Ω 5%, 1/8W, T/R 1206 PKG	RS1726	2
R13, 30, 50, 50A, 83	RES. F/CHIP 47.00 K Ω 5% 1/8W T/R 1206 PKG	RS1706	5
R15, 16	RES. F/CHIP 200.00 Ω 5% 1/8W T/R 1206	RS1830	2

REF. No.	DESCRIPTION	PART No.	QNTY.	REF. No.	DESCRIPTION	PART No.	QNTY
R18, 33	RES. F/CHIP 330.00 Ω 5% 1/8W T/R 1206 PKG.	RS1731	2	Transistors			
R31 14	RES. F/CHIP 56.00 K Ω 5% 1/8W T/R 1206 PKG.	RS1713	2	Q1, 2, 5, 6, 15	NPN SWCH 50V/100mA 10K/ CP OR SMT T/R 2-PIN SIDE ON FEED HOLE SIDE (SMD) *(SANYO 2SC3859-TA), (ROHM DTC114TK-T147)	TR1131	5
R34, 35, 37, 38, 39	RES. F/CHIP 43.00 K Ω 5% 1/8W T/R 1206 PKG.	RS1712	5	Q7, 41, 39	PNP AF 30V/150mA CP OR SOT-23 OR SMT 200 B 400 2PIN SIDE ON FEED HOLE SD(SMD) *(SANYO 2SA1781-6-TA), (PHILIPS BC858B)	TR1125.	3
R44, 44A	RES. C/F 33.00 Ω 5% 1/4W T/R OR AMMOPACK	RS1902	2	Q8, Q10, Q23, Q23A	NPN POWR 100V/ 3A/ 40W TO-220 *(SAMSUNG TIP31C), (SGS TIP31C)	TR1183	4
R45, 56, 66, 94, 94A, 95, 95A, 135	RES. F/CHIP 100.00 K Ω 5% 1/8W T/R 1206 PKG.	RS1702	8	Q9, 11, 24, 24A	PNP POWR 100V/ 3A/ 40W TO-220 *(SGS TIP32C), (SAMSUNG TIP32C)	TR1184	4
R46, 46A, 67, 67A, 98, 98A, 104, 104A.	RES. F/CHIP 15.00 K Ω 5% 1/8W T/R 1206 PKG	RS1725	8	Q12, Q3.	PNP SIGN 40V/600mA TO-92 T/R GENERAL PURPOSE LS=5.0mm *(MOTOROLA MPS2907ARLRA), (NATIONAL PN2907ARA)	TR1010	2
R51, 79	RES. F/CHIP 20.00 K Ω 5% 1/8W T/R 1206 PKG.	RS1719	2	Q13, 13A, 26, 26A, 29, 29A	TRANSISTOR NPN, 100V, 25A, HFE MIN=10 (15A,4V), TO-218 PKG POWER TRANSISTOR *(SGS TIP35C), (MOSPEC TIP35C)	TR1057	6
R53, 58, 105, 82	RES. F/CHIP 2.20 M Ω 5% 1/8W T/R 1206 PKG	RS1968	4	Q14, 14A, 27, 27A, 30, 30A	TRANSISTOR PNP 100 V, 25A, HFE MIN=10 (15 A 4 V), TO-218 PKG. POWER TRANSISTOR *(SGS TIP36C), (MOSPEC TIP36C)	TR1061	6
R63, 64	RES. F/CHIP 270.00 K Ω 5% 1/8W T/R 1206 PKG.	RS1730	2	Q18, 22, 22A	NPN SIGN 40V/600mA TO-92 T/R 1W *(NATIONAL PN2222ARA), (NATIONAL PN2222ARA)	TR1063	3
R71, 71A, 72, 72A, 73, 73A, 74, 74A, 75, 75A, 76, 76A	RES. C/F 5.10 Ω 5% 1/4W T/R AXIAL OR AMMOPACK.	RS1916	12	Q19, 19A, 28, 28A, 21, 21A	NPN SIGN 160V/60mA/ 625mW TO-92 T/R *(MOTOROLA 2N5551RLRA), (NATIONAL 2N5551RA[TR])	TR1167	6
R86, 86A, 89, 89A, 124, 125	RES. F/CHIP 470.00 Ω 5% 1/8W T/R 1206	RS1722	6	Q20, 20A, 25, 25A	PNP SIGN 150V/600mA/ 625mW TO-92 T/R *(MOTOROLA 2N5401RLRA), (NATIONAL 2N5401RA[TR])	TR1166	4
R90, 90A, 93, 93A	RES. F/CHIP 160.00 Ω 5% 1/8W T/R 1206	RS1829	4	Q31	SCR TO 92 PACKAGE T/R *(MOTOROLA MCR22-2 RLRA), (MOTOROLA MCR22-2)	TY1000	1
R92, 92A	RES. F/CHIP 4.30 K Ω 5% 1/8W T/R 1206	RS1877	2	Q32, 32A, 33, 33A, 34, 34A, 35, 35A, 36, 36A, 37, 37A	FET POWR 60V/35A/0.028 OHM TO-220 PKG. *(I.R. IRFZ44), (MOTOROLA IRFZ44)	TR1157	12
R103, 103A	RES. F/CHIP 10.00 Ω 5% 1/8W T/R 1206	RS1878	2	Q40, 42, 43, 44, 38	NPN AF 30V/ 150mA CP OR SMT 200 B 400 T/R 2-PIN SIDE ON FEED HOLE SIDE (SMD) *(SANYO 2SC4639-6-TA), (ROHM 2SC2412K-T147Q/R)	TR1108	5
R107, 107A	RES. F/CHIP 5.10 K Ω 5% 1/8W T/R 1206	RS1871	2	Inductors, Magnetics			
R108, 108A, 122, 132	RES. F/CHIP 4.70 K Ω 5% 1/8W T/R 1206 PKG.	RS1705	4	FB1, 2, 3, 4, 4A, 5, 5A, 6, 6A, 7, 7A, 8, 8A, 9, 9A, 10, 10A, FB11, 11A,	FERRITE BEAD	CC1028	19
R118	RES. F/CHIP 1.00 M Ω 5% 1/8W T/R 1206 PKG.	RS1767	1	L1, L1A	INDUCTOR AIR CORE 0.38uH ASSY. 00-MI1100	UA0087	2
R119	RES. C/F 470.00 Ω 5% 1/2W T/R	RS1539	1	L3, L3A	COMMON MODE INDUCTOR FOR 00-MI1095, GTS300, GTS600, & GTH400 ASSY.	UA0089	2
R126, 126A, 127, 127A, 128, 128A, 129, 129A, 130, 130A, 131, 131A	RES. F/CHIP 47.00 Ω 5% 1/8W T/R 1206	RS1903	12	FB14, FB14A, FB15, FB15A	FERRITE BEAD ASSEMBLY	UA0160	4
R142	RES. F/CHIP 220.00 K Ω 5% 1/8W T/R 1206	RS1891	1	T1, 00-MI1086	POWER TRANSFORMER FOR GTS600 ASSY.	UA0091	1
R47, 47A, 62, 62A, 91, 91A	RES. F/CHIP 7.50 K Ω 5% 1/8W T/R 1206	RS1831	6	T1A, 100-MI1108	POWER TRANSFORMER FOR GTS600 ASSY.	UA0097	1
R77, 77A, 78, 78A, 99, 99A, 100, 100A, 101, 101A, 102, R102A	RES. WIRE WO. 0.10 Ω 5% 5.0W RADIAL LS=5mm	RS1868	12				
J1-J8, J10-J20, J22, J22A.	RES. F/CHIP 0.00 Ω 5% 1/8W 1206 T/R	RS1779	21				
RN1, RN2	RESISTOR NETWORK 7-ISOLATED 33 KOHM RESISTORS 2% DIP-14 SPECIAL MARKING	RS1900	2				
VR1	RES.POT.100.00 K Ω DUAL GANG DETENT AT CENTER-15K Ω A TAPER, SHAFT LENGHT=8mm DIA.=3mm SLOT STYLE,BUSHING=6mm; WITHOUT TAP	RS1227	1				

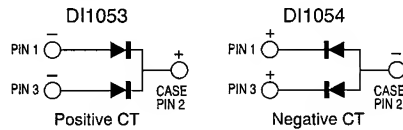
REF. No.	DESCRIPTION	PART No.	QNTY.
Miscellaneous			
FUSE1, 1A	FUSE HOLDER RIGHT ANGLE PC MOUNT (FOR AUTO FUSE)	FH1001	2
FS1, 1A	FUSE AUTO 40A/32V	FS1061	2
JK1	CONNECTOR RCA JACK 4 POSITION PC MOUNT GOLD PLATED RED-TOP WHITE-BOTTOM, 34mm WIDTH	CO1274	1
JK2	5569-N RIGHT ANGLE HEADER WITH MTG. PEGS. 94V-2, 4 CIRCUITS	CO1075	1
JW1-27, JW29-32, JW36-41, JW47, JW48-69, JW73, JW51A	WIRE AWG22, SOLID, ELECTROLYTIC, SOFT DRAWN AND ANNEALED TIN-PLATED COPPER.	WI1553	11.15FT.
HD1, 2, 3, 4	PIN HEADER STRAIGHT 2-POSITION 0.100" SPACING	CO1258	4
HD1, 4	CONNECTOR JUMPER 0.1" 2-POS.	CO1285	2
LED1	CONNECTOR HEADER STRAIGHT 2-POSITION	CO1284	1
M1	MODULE PWM	MA0007	1
PRE IN, PRE OUT, 00-XX1213	COAXIAL CABLE ASSY. 16.4"	UA0104	2
REM IN, REM OUT	WIRE #18 7x26 UL1015 BLUE THERMOPLASTIC INSULATION, TINNED, COPPER STRANDED 105	WI1637	0.4668FT.
RN1, RN2	LABEL FOR CROSSOVER NETWORK 80 Hz	LB1231	2
RN1, RN2	CONNECTOR IC SOCKET 14-PIN	CO1277	2
COAXIAL CABLES	NYLON, SELF LOCKING CABLE TIE 3" LENGTH, 0.1" WIDTH, 0.625" DIA. NATURAL COLOR	MS1065	4
	PC BOARD MAIN GTS600 135.15 SQ.IN. FR-4 1-SIDED	PC1088	1
SW4	NON SHORTING HORIZONTAL MICRO- SLIDE SWITCH, 2P2T, 3.5mm MTG. HEIGHT, 2.5mm TERMINAL LENGTH *(PANASONIC ESD11H220)	SW1011	1
SW1, 2, 3	NON SHORTING HORIZONTAL MICRO- SLIDE SWITCH, 2P3T, 3.5mm MTG. HEIGHT, 2.5mm TERMINAL LENGTH. *(PANASONIC ESD-11H230)	SW1013	3
TH1	THERMISTOR SUBASSY.	UA0161	1
JW9-JM14, JW28, 33, 34, 35, JW42, JW43, 44, 45, 46	WIRE #16 SOLID INSULATED BLACK UL1007 300V 80 DEG C	WI1586	2FT.
JC1, JC2	WIRE #12 SOLID UL1007 BLACK	WI1622	0.52FT.
+R, -R, +L, -L	WIRE #16 26x30, DUAL, CLEAR 300V C, 1 COND. TINNED, 1 COND. BARE	WI1625	1.6FT.
POWER (+)	WIRE #6 37x22 WHITE, RED OR YELLOW, TEMP. RATING: +125 C	WI1632	1.16FT.
POWER (-)	WIRE #6 37x22 BLACK TEMP. RATING: +125 C	WI1633	0.6FT.
CHASSIS GND.	HARNESS GROUND	UA0007	2
DS1	LED HARNESS	UA0214	1

* Manufacturer and Manufacturer's Part Number

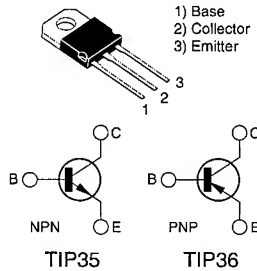
PWM MODULE (MA0007)

REFERENCE DESIGNATOR	DESCRIPTION	PART NUMBER	QNTY.
Capacitors			
C1	CAP. CERAMIC 2700.00 pF $\pm 10\%$ 100V X7R T/R 1206 PKG.	CP1434	1
C2, 3, 4	CAP. CERAMIC 0.10 μF $\pm 20\%$ 50V Z5U T/R 1206 PKG	CP1426	3
C19	CAP. ALUM EL. 22 μF $\pm 20\%$ 10V 85°C A/P RADIAL LEAD 5 X 11 T/R LS=2.0mm, F=2.5mm	CP1565	1
Integrated Circuits			
IC1	PWN CONTROL MODULE 16 PIN DIP	IC1002	1
Resistors			
R1	RES. F/CHIP 10.00 Ω 5% 1/8W T/R 1206	RS1878	1
R2	RES. F/CHIP 1.00 K Ω 5% 1/8W T/R 1206 PKG.	RS1700	1
R3	RES. F/CHIP 510.00 Ω 5% 1/8W T/R 1206 PKG.	RS1733	1
R4	RES. F/CHIP 6.80 K Ω 5% 1/8W T/R 1206 PKG.	RS1724	1
R5	RES. F/CHIP 100.00 K Ω 5% 1/8W T/R 1206 PKG.	RS1702	1
R6	RES. F/CHIP 4.70 K Ω 5% 1/8W T/R 1206 PKG.	RS1705	1
R7	RES. F/CHIP 12.00 K Ω 5% 1/8W 1206 T/R	RS1783	1
R8	RES. F/CHIP 2.20 K Ω 5% 1/8W T/R 1206 PKG.	RS1703	1
R9, 11	RES. F/CHIP 10.00 K Ω 5% 1/8W T/R 1206 PKG.	RS1701	2
R10	RES. F/CHIP 680.00 Ω 5% 1/8W T/R 1206 PKG.	RS1709	1
R12, 13	RES. F/CHIP 27.00 Ω 5% 1/8W T/R 1206	RS1826	2
R14	RES. F/CHIP 220.00 Ω 5% 1/8W T/R 1206 PKG.	RS1711	1
R15	RES. F/CHIP 4.30 K Ω 5% 1/8W T/R 1206	RS1877	1
J1	RES. F/CHIP 0.0 Ω 5% 1/8W 1206 T/R	RS1779	1
Transistors			
Q1	PNP SIGN 40V/600mA TO-92 T/R GENERAL PURPOSE LS=5.0mm	TR1010	1
Q2	NPN SIGN 40V/600mA TO-92 T/R 1W	TR1063	1
Miscellaneous			
P1	CONNECTOR SINGLE ROW HEADER RIGHT ANGLE 5-PIN 0.1" CENTERS TIN PLATED OR BETTER.	CO1249	1
P2, 3, 4	CONNECTOR SINGLE ROW HEADER RIGHT ANGLE 2-PIN 0.1" CENTERS TIN PLATED OR BETTER	CO1267	3
	BLANK PC BOARD FOR PWM MODULE 1.4576 SQ.IN. CEM-1 1-SIDED	PC1080	1
J3	WIRE #22 BARE SOLID TIN ELECTROLYTIC, SOFT DRAWN AND TIN-PLATED COPPER.	WI1553	0.042 FT

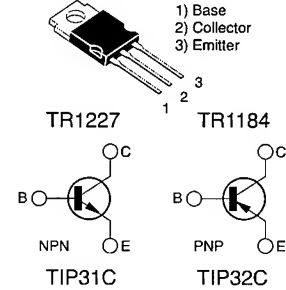
IC Voltage Diagrams

DI1053 (FEP16BT),
DI1054 (FEN16BT)

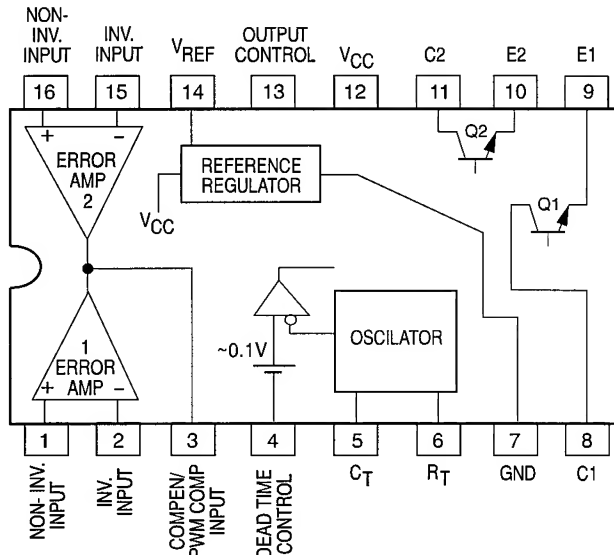
TR1057 & TR1061



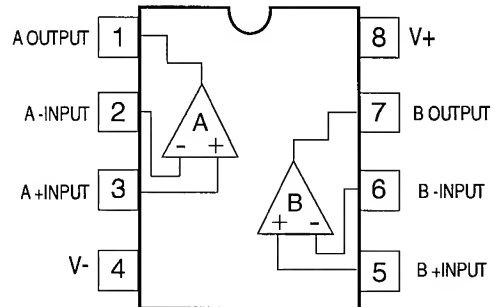
TR1183 & TR1184



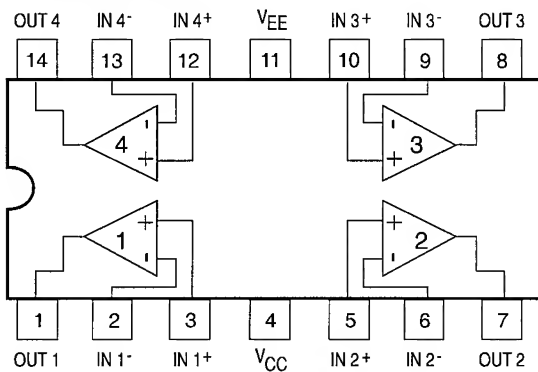
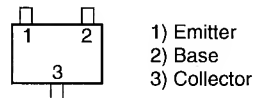
IC1002 (TL494)



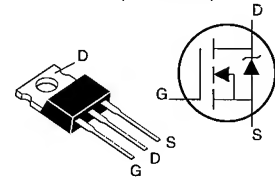
IC1175, IC1041 (TL072)



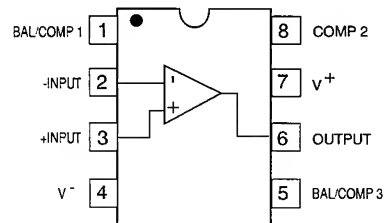
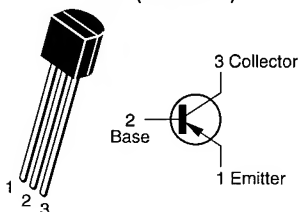
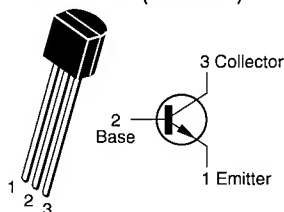
IC1162 (TL074)

TR1131 (25C3859),
TR1108 (25C4639),
TR1125 (25H1781)

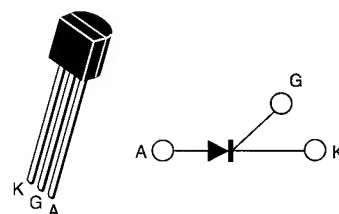
TR1157 (IRFZ44)



IC1040 (LM318)

TR1010 (MPS2907),
TR1166 (2N5401)TR1002 (2N3904),
TR1063 (MPS2222A),
TR1167 (2N5551)

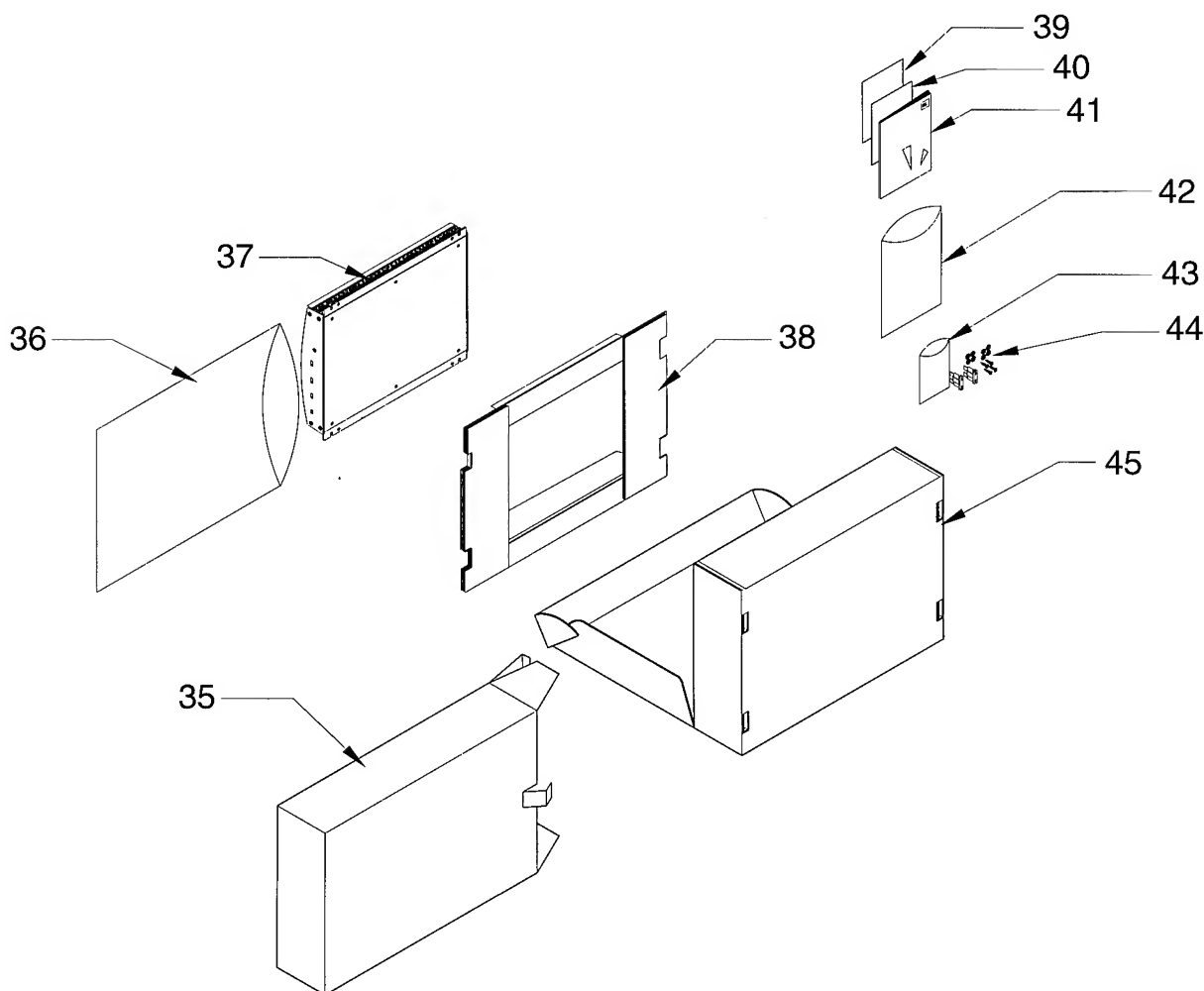
TY1000 (MCR22)



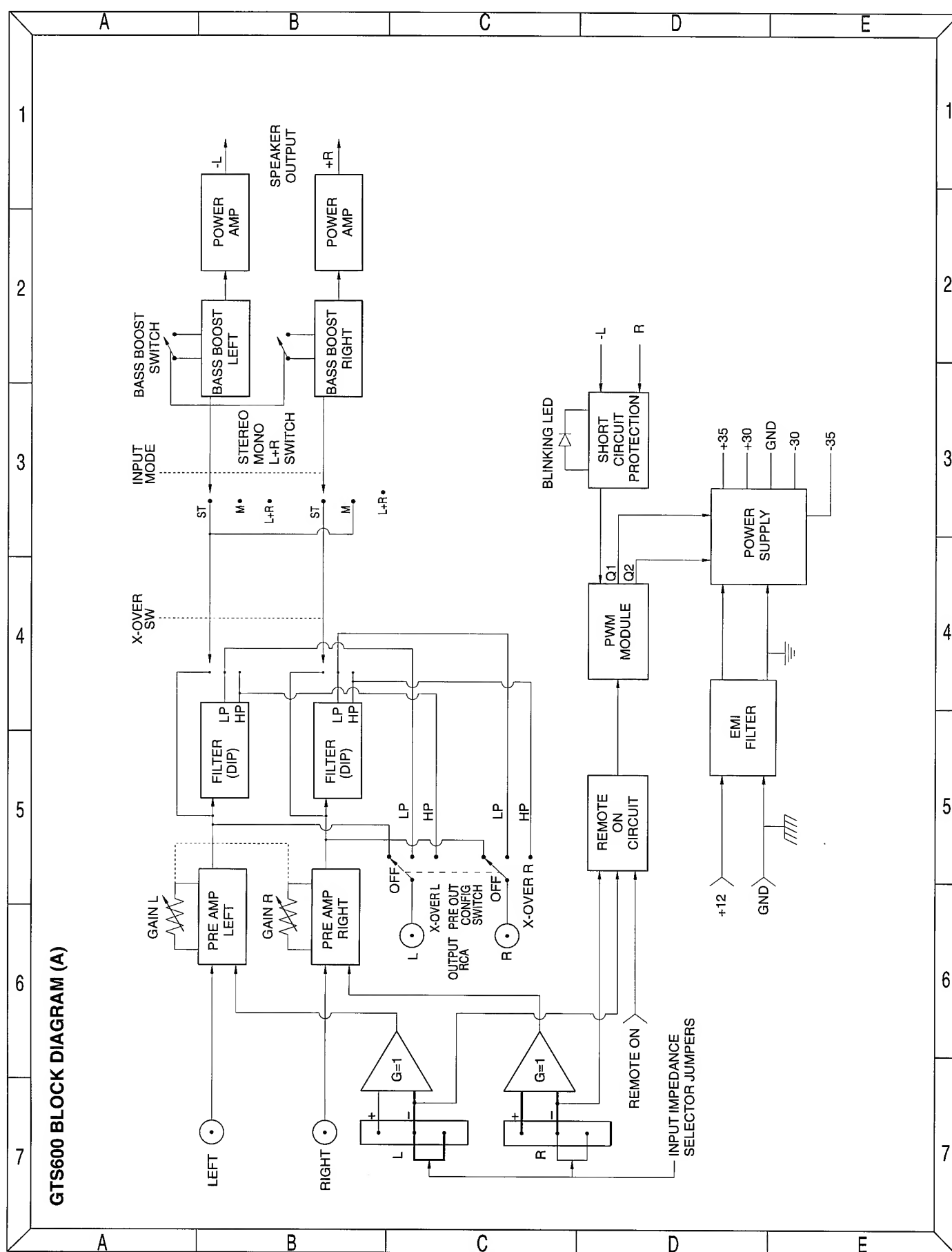
NOTE: Parts in parenthesis are manufacturer's numbers see parts lists for full list of possible manufacturer's part numbers.

GTS600 Package Parts List

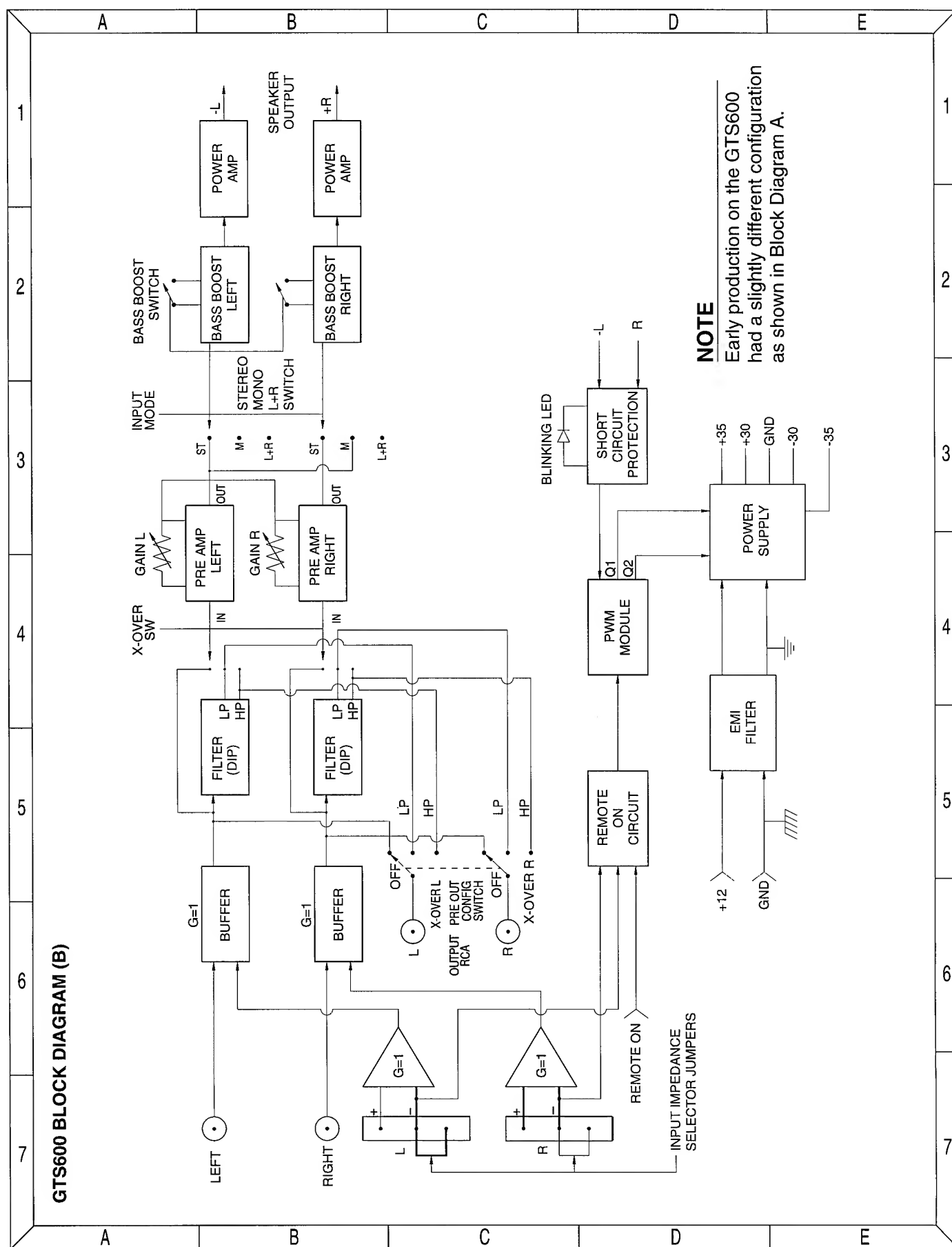
REF. No.	DESCRIPTION	PART No.	QNTY.				
35	BEAUTY BOX FOR JBL GTS600	PM1219	1		MOUNTING 0.375 OD x 0.180 OD x 0.060 Tk WASHERS PLAIN WASHER, NYLON 66, FLAME RETARDANT, TR:85C-95C,CLEAR.	WA1077	6
36	PLASTIC BAG 14"x24"x0.0015"	PM1225	1				
37	GTS600 UNIT		1		FUSE AUTO 40A/32V	FS1061	2
38	INTERNAL FILLER FOR JBL GTS600	PM1214	1	45	CARTON BOX FOR JBL GTS600	PM1213	1
39	DECLARATION OF CONFORMITY GTS600	SH1079	1				
40	WARRANTY SHEET/CONSUMER SURVEY CARD	SH1005	1		BOTTOM PLATE SERIAL NUMBER L BAR CODE LABE CARTON BOX, LABELTECH, MASTER CARTON	LB1223	3
41	OWNERS MANUAL FOR GTS600	SH1070	1		BOTTOM PLATE LABEL MODEL NUMBER FOR GTS600	LB1225	1
42	PLASTIC BAG 9"LX12"WX0.0015"T WITH RECYCLABLE LOGO,BAG FOR OWNERS MANUAL	PM1029	1		CE LABEL, 3/4 X 1/2" PAPER WITH ADHESIVE.	LB1250	1
43	PLASTIC BAG FOR ACCESSORIES 4"L X 4"W X 0.0015"T WITH RECYCLABLE LOGO	PM1221	1		3/4" ROUND, WHITE, PAPER BOND MATERIAL WITH ADHESIVE	LB1255	1
44	ACCESSORIES				MASTER CARTON FOR GTS600	PM1229	0.3334
	MOUNTING, SC #8 x 7/8 THREAD FORMING SCREWS TAPPING, PHI HEAD, POINT AB, NICKEL FINISH.	SC1208	6		SPEAKER HARNESS 4-WIRE 2-ROWS	UA0143	1
	WASHER HELICAL NICKEL FINISH SPRING LOCK #8	WA1075	6		SPARE PARTS 1/16 SHORT ARM HEX KEY FOR #6 SET SCREW	XX1240	1
					SPARE PARTS .050 SHORT ARM HEX KEY FOR #4 SET SCREW	XX1241	1
					SPARE PARTSS 5/32 SHORT ARM HEX KEY FOR #5/16 SET SCREW	XX1243	1



GTS600 Block Diagram A

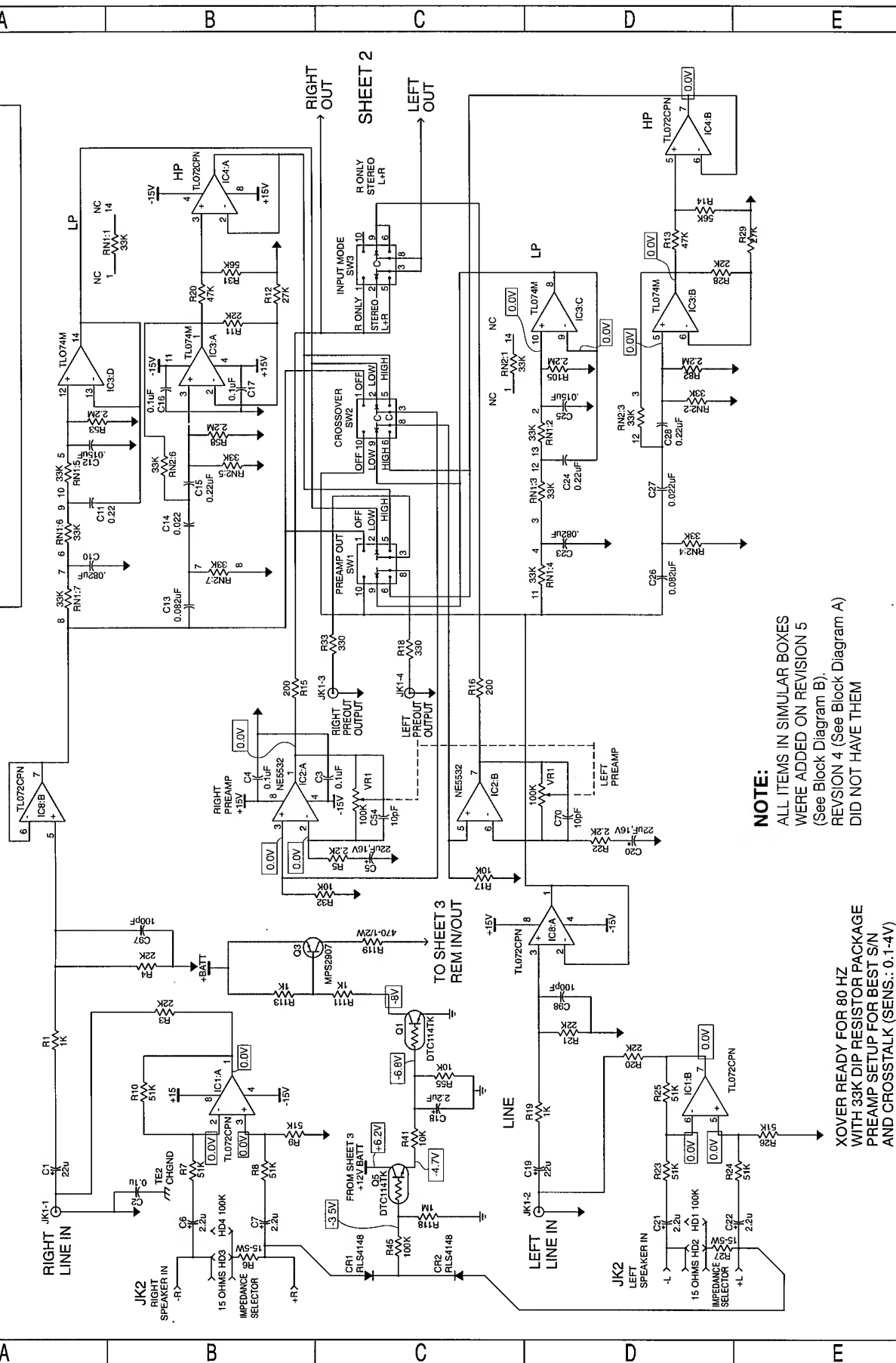


GTS600 Block Diagram B



GTS600 SCHEMATIC 1
06/03/95 Rev 5

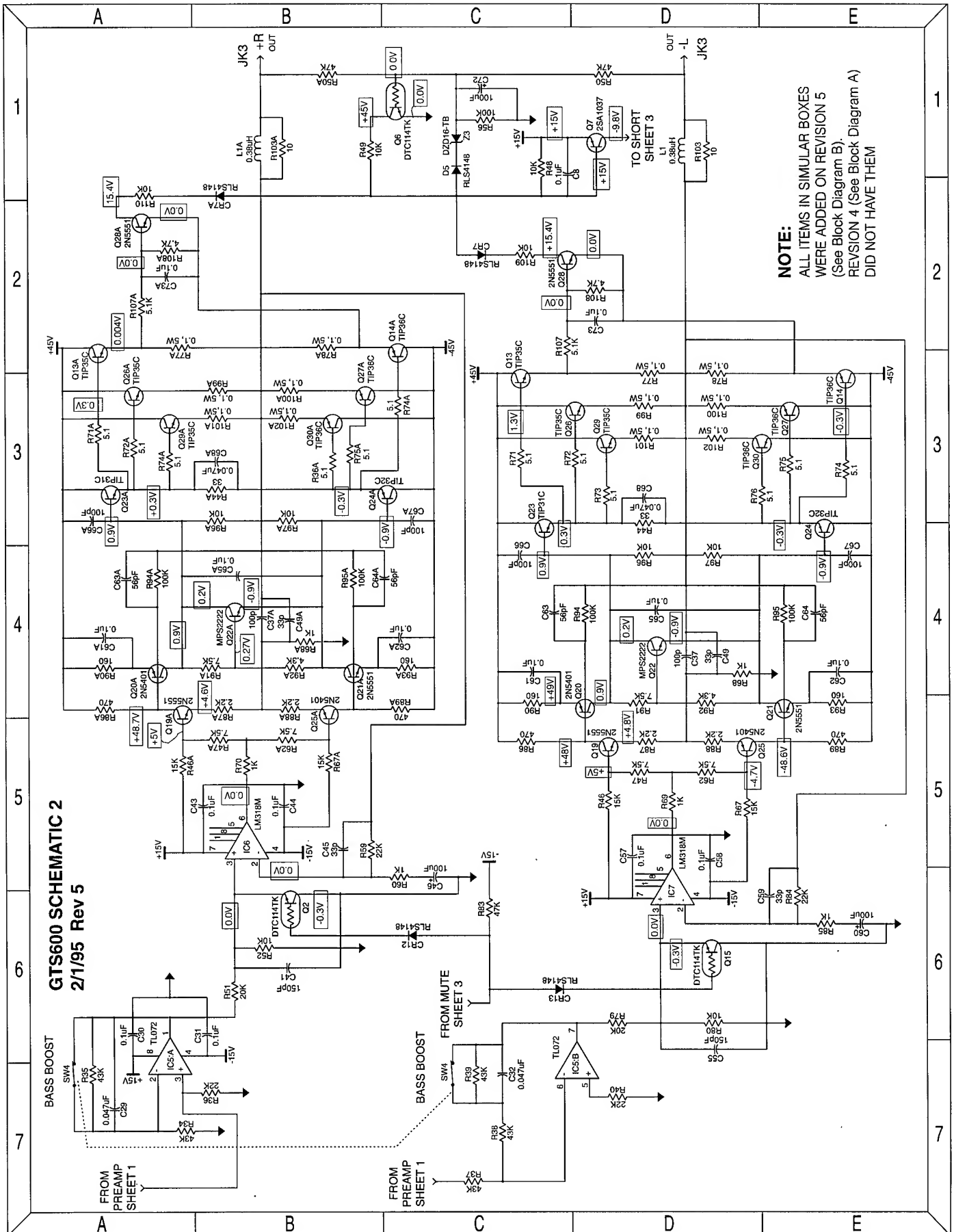
NOTE: ALL VOLTAGES ARE GIVEN FOR THE FOLLOWING TEST CONDITIONS: 14.4V POWER INPUT, NO SIGNAL INPUT, AND OUTPUT LOADED WITH 4Ω s



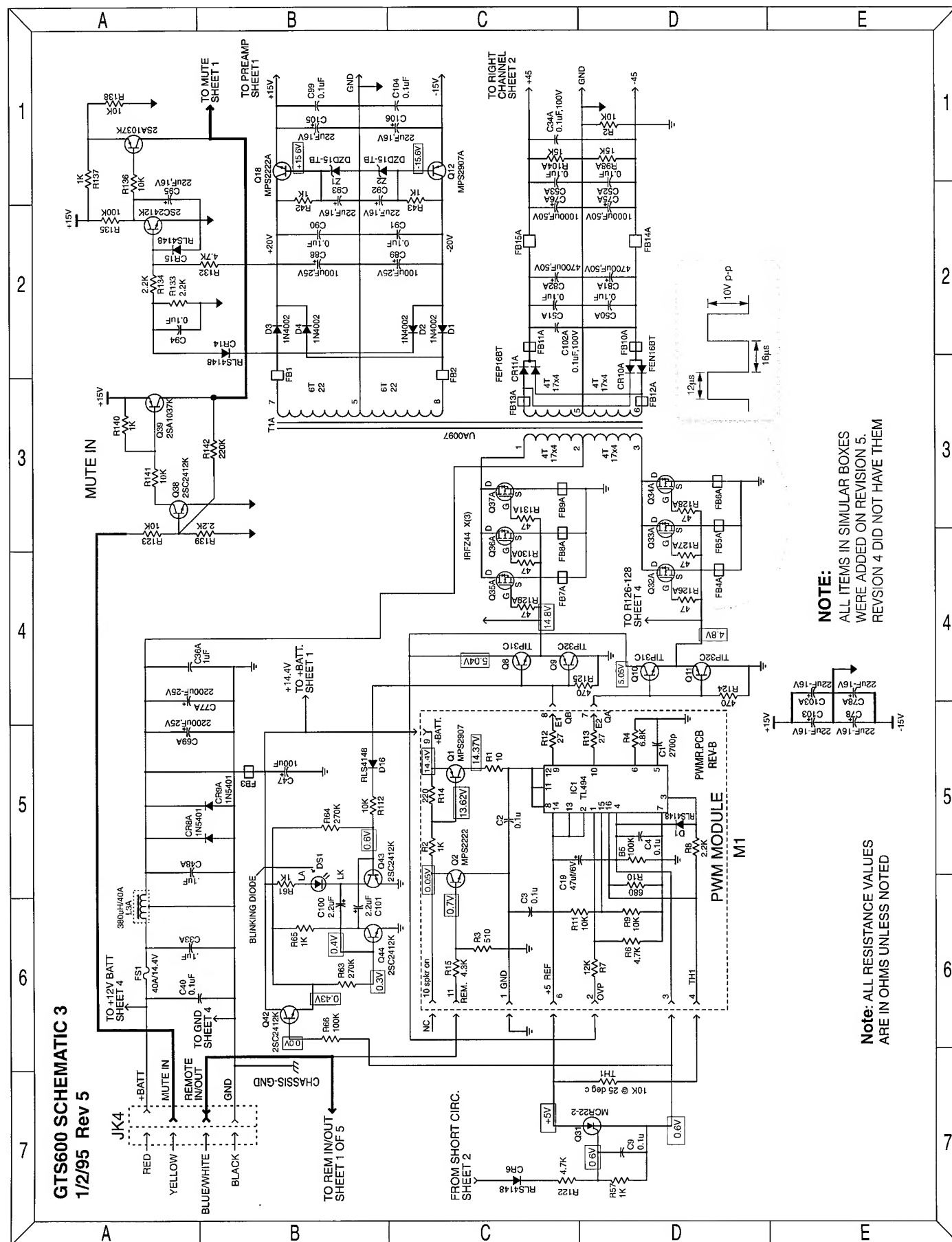
NOTE:
ALL ITEMS IN SIMILAR BOXES
WERE ADDED ON REVISION 5
(See Block Diagram B).
REVISION 4 (See Block Diagram A)
DID NOT HAVE THEM

OVER READY FOR 80 HZ
WITH 33K DIP RESISTOR PACKAGE
PREAMP SETUP FOR BEST S/N
AND CROSSTALK (SENS.: 0.1-4V)

GTS600 Schematic Diagram 2



GTS600 Schematic Diagram 3



GTS600 Schematic Diagram 4

